THE

AGRICULTURAL BULLETIN

OF THE

FEDERATED MALAY STATES.

No. 4.] JANUARY, 1918. [Vol. VI.

FIELD NOTES AND OBSERVATIONS ON BROWN BAST.

By W. N. C. Belgrave and F. W. South.

THIS disease has been attracting much attention recently both from planters and scientific workers in the Federated Malay States and Sumatra, and it is felt that some observations on the information gathered up to the present may be of service to planters in enabling them to decide what action to adopt towards controlling the disease on their estates. These observations are at present incomplete, as the necessary research work is not finished, and it may require some time yet before definite measures can be laid down. Certain points have, however, been determined fairly definitely from field observations ; these suggest provisional measures to be adopted according to the nature and intensity of the infection on each individual estate. The measures are based upon the assumption that the disease is due to a definite causative organism ; it may be pointed out that if the alternative theory of a physiological disease is correct, prevention may be expected to be extremely difficult, if not impossible. The conflicting ideas on the subject of this disease require to be cleared up, as soon as may be, and observations made up to the present suggest that a note of warning should be struck against the hasty adoption of too drastic measures, so far insufficiently tested, which may later prove to have been a mistake.

It must always be remembered that this disease, however undesirable from the point of view of the planter, is in reality practically harmless to the tree itself. No instances are known to us where trees have been killed by this disease ; on the other hand, many old trees are known which have been badly burred by the disease for years and are still vigorous and healthy in appearance except for the burrs, showing a good spread of branches and abundant leaves. As an extreme instance certain trees about 30 years old may be cited whose original main trunks have disappeared, so that they are entirely hollow at the base but are supported on and supplied by a cylinder of wood and bark that is entirely of burr formation. Therefore if infected trees are left standing, though the condition of their bark for tapping steadily deteriorates, there is no danger that they will die ; moreover, some satisfactory method

of treatment may later be devised ; consequently it is not desirable to cut out these trees too hurriedly, unless thinning out operations render such action suitable, especially when it is remembered that attacked trees are often the healthiest and best grown in the field.

Observations so far lead to the conclusion that the causative organism does not fruit on the surface of the bark of infected trees, so that these *when untapped on infected areas* are probably not a source of spread of the disease. Therefore there is no reason for their removal on this account.

Symptoms.

The first symptom of this disease in the field, in fact the only sign that the tree is diseased and therefore the only means of recognizing it, is a decrease in the yield of latex followed by the drying up of all or part or different parts of the tapping cut. This symptom alone must not, however, be taken as conclusive evidence of the presence of brown bast. To determine if brown bast is present or not the tapping cut should be freshly opened and should be carefully examined ; at the same time it is useful to cut into the bark just below the tapping cut with a gouge. This cutting must be done carefully. The first cut may go in to a sufficient depth to remove all the dry outer dead tissues and about half the thickness of the cortex and then successive cuts should remove comparatively thin layers because the infected layer is often very thin and deep cutting may remove it. If brown bast is present a layer will be found, usually well underneath the pinkish cortex, which shows brown, grey, or greenish lines and patches dirty and water-soaked. The recently opened tapping cut shows this layer as a row of discoloured spots and lines lying about $\frac{1}{8}$ inch outside the wood. The depth of this layer varies and in some cases it almost coincides with the cambium, though usually it is placed as stated. Beneath it the cortex is healthy and gives a little latex and outside it also the cortex appears normal. This discoloured layer is usually found in early stages just about the position occupied by the outermost latex tubes. As the disease progresses the discolorations become deeper in colour and often contain darker streaks where cells have died, while at the same time the area of bark infected increases considerably in size in all directions, but especially vertically ; later the discoloured layer becomes continuous along the whole length of the tapping cut. The cambium forms healthy tissue beneath the diseased layer and forces the latter outward causing vertical splits to appear in the bark. At this stage there is usually a considerable return of latex and the inner healthy layer will have been found to have increased in width. Later, however, a new diseased layer is formed further in and in extreme cases may practically coincide with the position of the cambium. The forcing off of the outer layer of diseased tissue is continued and it eventually comes away as a thick slab of dry outer bark, leaving a slight but definite depression, the surface of which is of a fresher colour than the surrounding bark. If the cortex is cut into on such a depression the peculiar streaky brown colouration which may be described as a "pepper and salt" appearance will often be found in a definite layer not very far below the surface showing that the disease is still present.

At different stages in the development of the disease, but usually after the first partial return of the latex, burrs begin to form in the bark. These may appear comparatively soon after a definite infection has been observed, or they may be delayed for some months. They gradually increase in size until at least the whole tapping section, sometimes all the bark round the bottom 2 or 3 feet of the tree, finally become so badly burred as to be no longer tappable. Were it not for the roughness of the burred surface tapping would usually be possible since the bark of burred portions generally contains an average amount of latex.

At this point it should be noted that the disease makes its appearance at one of two distinct points on a tree, either at the tapping cut, or at the collar. The symptoms vary somewhat in each case and the matter is important from the point of view of treatment. When the infection has commenced on the tapping cut it will be found in early stages that the bark is only affected for a limited distance below the cut and for a smaller distance in the renewal above the cut. The collar is free from the disease. It will also be found that the infection is confined to the section of the tree that is being tapped. As the disease progresses it spreads downwards more rapidly than upwards and eventually reaches the ground level. Splitting of the bark shows first just below the tapping cut as would be expected and burring commences at or just below the cut. A prominent burr development forms both above and below the cut, usually extending further down the tree than up. In this stage tapping cut infections are easy to identify, in earlier stages it is necessary to examine the cortex at intervals down the tree to the ground to determine if the collar and lower parts of the bark are healthy. It has been observed that the tapping cut infections frequently remain confined to one tapping section only, especially if the vertical channels have been cut fairly deeply. It may remain confined to the one section for some time.

Collar infections commence at the soil level or just below it and spread upwards. As the disease spreads more rapidly in some parts than in others, the upper margin of infected tissue is uneven and promontories or finger-like projections of diseased cortex are formed. As the tapping cut moves down the tree it may one day cut through one or two of these projections and comparatively suddenly show one or more dry or nearly dry spots, though just previously the latex flow may have been satisfactory. The lower down the cut moves the longer become the dry lengths of the cut until finally practically no latex is obtained where the cut runs entirely through diseased bark. Collar infections often spread some distance down the main root and also out along any superficial lateral roots arising near the infected part. On lateral roots the infection may be confined to the bark on the damp under surface where they are in contact with the soil. In these cases the disease is more liable to spread all round or nearly all round the tree than in the case of tapping cut infections, especially in virgin bark free from vertical channels. Such infections are apparently as common on virgin bark on newly opened trees as on renewed bark and one instance is reported where a young untapped tree was infected. Bark splitting and burring in these cases commences near the soil level and spreads upwards, bark splitting may often be seen on the exposed surfaces of lateral roots near the trunk.

Apart from any other considerations, the fact that this disease may make its appearance at either of two different and definite places on a tree, the collar or the tapping cut, appears to the writers a strong indication that it is caused by a definite organic parasite. The theory suggested by these facts is that a soil organism enters trees at the collar possibly through the lenticels or through small wounds and is then conveyed from cuts running through infected bark by way of the tapping knife and the coolies' hands to cuts on other trees. At present this is merely a theory, however, and awaits the results of further investigation for proof or disproof.

Trees are often found which appear to have dried up owing to causes other than brown bast. Such trees show no discoloration in the cortex and the drying up is often only temporary. They should be left untapped until the latex returns.

Treatment and Prevention.

Practically all the methods suggested for the treatment and prevention of this disease are still in a purely experimental stage; some of them are both expensive and drastic. So far nothing recommended for trial has been conclusively proved successful either as treatment or preventive. Under these circumstances caution is advised. Empirical measures may prove successful, but equally or more probably may prove wasteful and harmful. The period of waiting while the necessary knowledge is being obtained may, however, be bridged over by certain palliatives and by the more harmless and inexpensive empirical measures suggested by field observations and recommended by various writers on this subject.

(*a*).—*Tapping Cut Infections.*

When these are recognized in an early stage so that the disease has not spread more than about 3 inches below and one to 2 inches above the cut, it would probably be found beneficial to adopt the stripping method described by Magill in the *Malayan Tin and Rubber Journal*, 30th July, 1917. Two vertical cuts should be made on either side of the infected area; their positions usually coincide approximately with those of the vertical channels, a horizontal cut should be made above the area and another cut should be run round below it. All should include a small margin of healthy tissue and should extend down to the wood. The bark should then be eased away from the wood from the bottom, upwards, as the renewing bark does not come away easily. Care should be taken in levering up the bark along the edge not to press the knife into the wood below more than is unavoidable. When the edge has been freed it should be taken firmly in the fingers and the whole piece of infected bark should then be stripped off. The exposed surface must not be touched and must be shielded from the sun and wind for a few days with a piece of damp cloth stretched on wires so that it cannot touch the exposed tissues.

An alternative course is to scrape the infected surface, having previously isolated it by means of narrow cuts with a gouge extending down to the wood. These cuts should be made in the same positions as those described above for stripping. They must be kept open and should be painted with a mixture of 50 per cent. Tar and 50 per cent. Jodelite applied with a fine brush. Scraping

may be comparatively superficial removing only the outer bark and very little of the cortex. In this case the surface should be painted with a 15 per cent. solution of Izal in water or 20 per cent. Brunolinum in soft soap and water. This method does not seem likely to give satisfactory results judging by experiments that have been tried. Preferably scraping should extend down to the point at which latex is just commencing to ooze out, and a weak disinfectant, 2 or 3 per cent. Izal or 5 per cent. Brunolinum solution should be applied. This method is more likely to be successful, but experiments indicate that if even a small piece of infected tissue is left the disease is likely to spread again from it.

Probably the best course is to isolate all the infected patches by means of narrow cuts down to the wood as described and then to try the other measures on a limited number of trees, at least as a commencement.

When the diseased area has been isolated as described a fresh tapping cut may be opened on the tree, preferably on the next oldest tapping section. It is preferable to place this cut at such a height as will allow of a proper renewal without including the original diseased area in the intended scheme, in case this area fails to recover satisfactorily. New cuts on infected trees should not be opened unless preventive painting is adopted.

When trees are in later stages of disease resulting from tapping cut infections, the diseased area, usually one tapping section, should be isolated as described above by opening up the vertical channels down to the wood and putting in the necessary horizontal cuts above and below the infected bark. Stripping and scraping being uncertain in their results cannot yet be recommended generally. The cut should, in these cases, always be transferred to a new section. The removal of a strip of bark 3 or 4 inches in vertical length recommended for early stages of infection is very different from removing a strip 2 or 3 feet long as is necessary in older cases.

The proportion of trees infected at the tapping cut to those infected at the collar varies greatly from one estate to another. In one case noted about 30 per cent. were cut infections and 70 per cent. collar; in another case 70 or 80 per cent. were cut infections and only about 20 or 30 per cent. collar. It happened that the trees on both estates were much about the same age, 7 to 8 years and the types of soil were not very different. Whenever even a few definite tapping cut infections occur, preventive daily or alternate daily painting with 5 per cent. Izal or "Formalin-bisulphite" solutions should be undertaken at any rate on all the infected tasks. Even if collar infections only occur and it is intended to continue tapping the infected trees preventive painting should be done as a safeguard.

One other point requires mentioning. When a tree tapped on the V system becomes infected with either brown bast or "black-stripe" disease, both sides of the cut are almost always affected. This leaves only half the tree for further tapping. In the case of brown bast at any rate, requiring isolation methods and perhaps more drastic treatment, there may be too small a portion of uninterrupted bark left, if even one more quarter is tapped. Therefore it would seem advisable to drop V tapping and substitute a quarter system on estates having more than 2 or 3 trees per acre affected with brown bast.

(*b*).—*Collar Infections.*

These are usually more extensively diseased before the attack is discovered. If the disease has not spread far round the tree, the infected bark may be isolated by gouge cuts as described above, but care must be taken to make sure how far round it has extended. If only a small area is affected, a new tapping cut may be opened as described, if preventive painting is done. More usually, however, the area is fairly extensive and it is wiser to isolate it and leave the tree alone in case measures may be found in the future to render it useful again. On smaller patches of infected bark scraping may be done, at any rate experimentally, or even stripping if the patch is not too large.

If thinning out has not been completed trees affected with brown bast at the collar should be removed. If it has been finished such trees may remain as stated above.

(*c*).—*Burrs.*

Burred trees should either be removed in thinning out, or when this operation has been completed should be left untapped. Possibly they may have to be removed in the end, but they might wait until something more definite is known of the possibility of treating them. In this connexion it should be remembered that burred tissues often contain latex in paying quantities as stated above and that excision with a tapping knife is not the only means of obtaining it.

Soil Treatment.—The fact that the disease enters trees at the collar naturally suggest the desirability of some form of soil treatment. Experiments along certain lines have been started, but have not been in progress long enough to give any results as yet. A description of these experiments is given elsewhere in this number of the *Agricultural Bulletin.*

In conclusion it may be stated that evidence so far obtained indicates that trees once affected by brown bast have no chance of recovering naturally.

EXPERIMENTS ON THE PREVENTION OF BROWN BAST.

By W. N. C. Belgrave.

IT should clearly be understood that the suggestions given below for soil treatment are purely experimental, and should at first be confined to the small areas mentioned.

It is suggested that such managers as are able and willing, co-operate by carrying out some, or all, of the following experiments:

(*a*) Applications of 2 tons of lime per acre. This should be applied in quantities of not more than $\frac{1}{2}$ ton at intervals of not less than 2 months, and worked into the soil by cultivation;

(*b*) The same quantity of lime similarly divided up but broadcasted over the soil, which has not been cultivated, but merely had the surface (first inch or so) broken up, *e.g.*, by rakes;

It is possible that this method will give equally good if not better results than (*a*);

(*c*) Application of lime around each tree, and not over the whole field. The surface should be raked as in (*b*) over a circle of radius 5-6 feet and say—10 lbs. per tree applied;

This might be repeated after 2 months;

(*d*) As a corollary to (*c*) a further plot, or part of the (*c*) plot might have the trees lime-washed from the collar to a height of 12 inches;

(*e*) Application of common salt around the tree. A few handfuls of salt should be scattered around the trees every month;

(*f*) Preventive painting as for black stripe, with either Izal or Formalin-bisulphite should be combined with (*b*), (*c*), (*d*) and (*e*), and also tried alone;

It is suggested that areas of not less than 5, and preferably 10 acres be taken for each experiment. A count should be made of the trees known to be diseased (with brown bast) at the start of the experiment, and monthly records made of fresh cases, *i.e.*, the ordinary estate routine on badly affected estates. If possible a distinction should be made between disease starting at the collar and the tapping cut;

(*g*) Where such a monthly count is not made throughout the estate, one or two special untreated plots should be set apart, and counts made there as controls; if counts are made the whole estate may serve as a control.

The most important experiments are probably (*c*), (*c*) and (*d*), (*c*) and (*f*), (*e*) and (*f*), and if time and space are limited, these should be done in preference to the others.

After the diseased trees have been noted each month, they may be treated according to the method normally employed by the estate, *i.e.*, scraping, stripping, or being left alone, untapped.

TAPPING EXPERIMENT AT NEW LUNDERSTON ESTATE.

By F. G. Spring and B. Bunting.

THE following experiment is being conducted on New Lunderston Estate, Banting, where a block of land, admirably suited for carrying out tapping experiments, was put at the disposal of the Department of Agriculture through the courtesy of Mr. E. Macfadyen.

The systems of tapping were selected from a list of experiments drawn up by the writers and approved by the Advisory Sub-committee for Experiments.

The actual supervision of field work and recording of yields are being carried out by the manager (Mr. E. G. B. Middleton) whilst periodical visits were made by the writers in connection with the progress of the experiments. Monthly records of yields and other experimental data were submitted to the Department by the manager.

The writers wish to thank Mr. E. G. B. Middleton, Manager, New Lunderston Estate, and also Mr. R. G. Symons, who was previously in charge of the estate, for the efficient manner in which they have supervised the working and recording of the experiment.

Description of Experiment.

The experiment is arranged to show the respective yields from tapping on one-quarter, one-third and one-half the circumference, the trees being tapped daily by a single oblique cut to the left at a height of 14 inches from the ground.

The area under experiment consists of a compact block of 60 acres of flat, well-drained alluvial land, planted 30 ft. × 12 ft. The area selected is bounded on three sides by estate roads and this greatly facilitates supervision.

The trees, which were $4\frac{1}{2}$ years old at the commencement of the experiment, showed remarkably uniform growth and about 80 per cent. were included in the experiment. It should be stated that up to the time of starting the tests none of the trees had been tapped.

The experiment is conducted on the "row method," which consists of tapping one system on each row—*i.e.*, rows Nos. 1, 4, 7, and so on, were tapped on the quarter, Nos. 2, 5, 8, etc., on the third and Nos. 3, 6, 9, etc., on the half-spiral systems of tapping. This method tends to reduce to an absolute minimum any factors produced by the variation of the soil or natural differences in the trees.

There are 45 rows in the experiment and it is arranged that throughout the area each cooly taps three rows which includes each system of tapping, so that any error due to inequality of individual tappers is entirely eliminated.

Row No. 1 was marked with a green circle, No. 2 white and No. 3 black, indicating the quarter, third and half-spiral systems of tapping, respectively; this arrangement being continued throughout the 45 rows included in the experiment.

Each cooly is provided with three small sacks marked green, white and black for collecting the scrap and bark shavings. The tapper commencing on the quarter system collects the tree scrap and bark shavings leaving the green sack at the termination of that particular row; he then uses the white sack for the one-third and the black sack for the half-spiral system. Each tapper is supplied with three latex pails which are marked in the same way, so that when tapping is completed it is an easy matter to collect the latex and scrap rubber according to the distinctive colours on the pails and sacks.

At the commencement of the experiment there were 1,860 trees included under each system of tapping and the average number of trees tapped per cooly is 372. It should be stated here that there is an additional number of trees tapped under each system and kept in reserve, so that in the event of any trees being lost through wind, disease or other causes, it is possible to replace such losses by trees which are exactly in the same stage of tapping without interfering with the experiment.

The labour employed is Tamil and the gouge knife is used throughout the experiments.

It is arranged that only two grades of rubber are made, namely, No. 1 latex and other grades, and the figures given in the attached tables are calculated on the dry weights of rubber.

Results of the Experiment.

In view of the fact that the cuts are always at the same relative height and tapped under the same conditions it is considered advisable to publish records of yields at the completion of each tapping area; therefore, the results given below represent the yield from exactly one-quarter, one-third and one-half the circumference of the tree. With the cuts always at the same height, the records are comparable at any given time and will remain so until the half-spiral is finished, when in the event of insufficient bark renewal, top-tapping would have to be resorted to in the case of this system, whilst both the one-quarter and one-third will have sufficient bark at the base of the tree to continue tapping for further periods, *i.e.*, one in the case of the one-third and two in that of the quarter system.

Relative Yields.

The following are the total yields obtained from the three systems of tapping for the whole period:

	Quarter.	Third.	Half.
Total yield per 1,860 trees for 19.5 months... ...	6,060 lbs.	7,913 lbs.	10,090 lbs.
Relative yield	100	131	167

Taking the quarter as a standard it will be observed that the total yields were not in proportion to the amount of bark consumed and in making comparisons it must be remembered that the bark removed under each system was in the ratio of 3 : 4 : 6 for the quarter, third and half, respectively. If the relative yields were proportional to the bark removed the figures would be—quarter, 100; third, 133⅓; half, 200. It will thus be seen that the third as compared with the quarter gives an additional yield very nearly proportional to the additional bark removed, whereas the half gives a relative yield considerably less than the theoretical figure.

It may be remarked that the yields throughout the experiment are somewhat low, but due allowance should be made for the fact that during the 19.5 months under review the trees were tapped on 72 days when the yields were not recorded owing to interference by rain.

Percentage Yields of No. 1 Latex and Scrap Rubber.

From the figures given below it will be seen that the percentage of No. 1 latex and scrap rubber was, approximately, the same in each experiment:

	Quarter.	Third.	Half.
No. 1 latex	88.2	88.5	87.9
Scrap rubber	11.8	11.5	12.1

Costs of Tapping.

With one cooly tapping a row under each of the three systems it is only possible to apportion one-third of the cost to each particular system and assuming, for the purpose of comparison, that a cooly receives 30 cents per diem with 15 coolies employed under each system the average costs of tapping per lb. of rubber produced for the 491 days of tapping are shown as follows:

Quarter.	Third.	Half.
12.15 cts.	9.31 cts.	7.30 cts.

It should be pointed out that the tapping task was the same in each experiment, whereas in ordinary estate practice a cooly would be expected to tap a larger number of trees on both the quarter and third systems than on the half-spiral system of tapping, so that a considerable reduction in the costs of tapping would be effected in both cases.

Bark Consumption.

Attention must also be drawn to the amount of bark removed during the period under review, which actually included 561 tapping days, although, as previously stated, only 491 were recorded in the experiment, the balance of 72 tapping days being affected by rain when the yields were not recorded. During this period the total bark removed in the 19.5 months of tapping was only 13½ inches, which gives the exceptionally high figure of 41.7 cuts per inch. To the average planter this figure will no doubt appear almost

incredible and it may be interesting to know that the average bark consumption on daily tapping over the whole estate is as low as three-quarters of an inch per mensem, which gives 40 cuts per inch of bark removed.

Summary of Results.

The results of the experiment are summarized below :

	Quarter.	Third.	Half.
Total yield per 1,860 trees for 19.5 months	6,060 lbs.	7,913 lbs.	10,090 lbs.
Relative yield	100	131	167
Number of tapping days ...	491	491	491
Average monthly yield per 1,860 trees	311 lbs.	406 lbs.	512 lbs.
Average yield per tapping per 1,860 trees	12.3 „	16.1 „	20.6 „
Average yield per tree for 19.5 months	3.26 „	4.25 „	5.42 „
Average lbs. per cooly per tapping for 19.5 months	2.45 „	3.22 „	4.11 „
Tapping costs per lb. for 19.5 months (calculated)	12.15 cts.	9.31 cts.	7.30 cts.

General.

It might be stated here that similar experiments, the results of which have not as yet been published, show that both the quarter and the third give a higher proportionate yield when compared with the half-spiral and until the figures are available from a further period of tapping the writers refrain from drawing any definite conclusions from the experiment described above. At the same time the records of yields are no doubt of special interest in view of the present tendency to more conservative methods of tapping on virgin bark.

There is no doubt, however, that the experiment shows an exceptionally high yield of rubber per unit area of bark removed and this may be the deciding factor in recommending which system of tapping it would be best to adopt with such a high number of cuts per inch of bark removed.

As previously pointed out the yields throughout the experiment are somewhat low and it is possible that latex has been sacrificed in obtaining such a high number of cuts per inch of bark removed. From an economic stand-point, this raises a very important question and an experiment is being arranged to show the effect on the daily yield by tapping a varying number of cuts per inch of bark removed.

ONE-QUARTER.

One-Quarter, Every-day Tapping, One Cut 14 inches from ground.

Month.	Trees tapped.	No. 1 Latex.		Scrap.		Total rubber.		Tapping days.	Yield per plot per tapping.
		lbs.	ozs.	lbs.	ozs.	lbs.	ozs.		lbs.
1916.									
April	1,860	64	14	6	12	71	10	13	5.51
May	„	215	3	15	4	230	7	29	7.94
June	„	176	9	9	13	186	6	27	6.90
July	„	225	8	33	...	258	8	28	9.23
August ...	„	299	9	29	14	329	7	30	10.98
September ...	„	285	14	38	15	324	13	29	11.20
October ...	„	271	11	22	13	294	8	28	10.52
November ...	„	311	...	35	7	346	7	27	12.83
December ...	„	295	6	44	12	340	2	25	13.60
1917.									
January ...	„	282	15	32	5	315	4	27	11.68
February ...	„	310	14	30	13	341	11	24	14.24
March	„	262	6	37	7	299	13	22	13.63
April	„	226	15	36	12	263	11	21	12.56
May	„	266	13	33	4	300	1	25	12.04
June	„	326	12	54	6	381	2	26	14.66
July	„	348	8	45	4	393	12	24	16.41
August ...	„	247	2	38	11	285	13	19	15.04
September ...	„	330	15	54	6	385	5	23	16.75
October ...	„	296	11	53	8	350	3	21	16.68
November ...	„	301	1	59	14	360	15	23	15.69
Totals ...	1,860	5,346	10	713	4	6,059	14	491	12.34

ONE-THIRD.

One-Third, Every-day Tapping, One Cut 14 inches from ground.

Month.	Trees tapped.	No. 1 Latex.		Scrap.		Total rubber.		Tapping days.	Yield per plot per tapping.
		lbs.	ozs.	lbs.	ozs.	lbs.	ozs.		lbs.
1916.									
April	1,860	78	11	13	13	92	8	13	7.11
May	„	269	15	21	3	291	2	29	10.04
June	„	249	4	12	3	261	7	27	9.68
July	„	319	13	40	7	360	4	28	12.87
August ...	„	389	11	41	10	431	5	30	14.38
September ...	„	380	8	45	11	426	3	29	14.70
October ...	„	375	13	29	3	405	...	28	14.46
November ...	„	409	14	48	1	457	15	27	16.96
December ...	„	394	13	58	11	453	8	25	18.14
1917.									
January ...	„	373	10	40	6	414	...	27	15.33
February ...	„	407	9	37	3	444	12	24	18.53
March	„	322	10	56	10	379	4	22	17.24
April	„	284	2	40	11	324	13	21	15.47
May	„	348	8	39	1	387	9	25	15.50
June	„	411	7	66	15	478	6	26	18.40
July	„	453	12	59	6	513	2	24	21.38
August ...	„	319	...	47	3	366	3	19	19.27
September ...	„	415	13	71	10	487	7	23	21.19
October ...	„	379	9	70	11	450	4	21	21.44
November ...	„	418	2	69	12	487	14	23	21.21
Totals ...	1,860	7,002	8	910	6	7,912	14	491	16.12

Half-Spiral.

Half-spiral, Every-day Tapping, One Cut 14 inches from ground.

Month.	Trees tapped.	No. 1 Latex.		Scrap.		Total rubber.		Tapping days.	Yield per plot per tapping.
		lbs.	ozs.	lbs.	ozs.	lbs.	ozs.		lbs.
1916.									
April	1,860	123	15	17	9	141	8	13	10.88
May	„	374	7	33	11	408	2	29	14.07
June	„	344	3	16	10	360	13	27	13.36
July	„	411	12	54	6	466	2	28	16.65
August ...	„	493	10	50	4	543	14	30	18.13
September ...	„	467	1	54	5	521	6	29	17.98
October ...	„	493	...	53	8	546	8	28	19.52
November ...	„	541	12	66	10	608	6	27	22.53
December ...	„	515	2	81	12	596	14	25	23.88
1917.									
January ...	„	485	11	49	3	534	14	27	19.81
February ...	„	538	13	53	...	591	13	24	24.62
March	„	419	8	78	4	497	12	22	22.62
April	„	363	5	52	1	415	6	21	19.78
May	„	450	6	54	10	505	...	25	20.20
June	„	505	...	97	5	602	5	26	23.16
July	„	547	14	72	5	620	3	24	25.84
August ...	„	383	8	67	7	450	15	19	23.73
September ...	„	486	14	103	2	590	...	23	25.65
October ...	„	433	12	84	14	518	10	21	24.69
November ...	„	487	9	81	15	569	8	23	24.76
Totals ...	1,860	8,867	2	1,222	13	10,089	15	491	20.55

POPULARIZING NATIVE AGRICULTURE.

By D. H. Grist.

IT is a matter of some difficulty to bring home to the Malays the work that is done by the Agricultural Department towards the improvement of local agriculture. The ordinary Malay, and even the minor chiefs, know little or nothing of the work that has been done in this direction. To persuade the Malay to accept new theories or improved methods, is a work not without difficulties. It has even been thought a matter of impossibility to arouse interest in the native cultivators, to induce them to embrace new principles and improved methods. The fact is, that although the Malay has a receptive mind, the conditions of living have been so easy that it has not been necessary for him to take thought of the morrow. Now it becomes more imperative for him to do so.

During the past few years, work has been done by the Agricultural Department along many lines which affect the native cultivator, but one can see few signs of the acceptance of the results by the Malays. The reason is that they do not know of the work done. To ensure the steady progress of native agriculture, it is becoming increasingly more necessary that the applications of experimental work should be taken in hand, and should in fact, follow closely in the wake of the results. To attain this ideal, there must be confidence between scientist and cultivator. This is lacking. Doubtless such confidence comes with education, so that future generations will be more receptive than the present generation. In the meantime, are the results to be lost, or to wait for a generation? Can nothing be done at the present time to induce the Malays to pay more attention to these improvements?

Perhaps the more important lines of work which have a bearing on native life are the introduction of new crops, and the improvement of existing varieties; the general improvement of the padi industry, and the art of growing Hevea and the preparation of rubber.

The present position of padi work in the Agricultural Department is so far advanced that there is every reason to wish for the Malay cultivators to be aware of the lines on which the work has been done, and of the future prospects. Work has progressed towards the improvement of padi by selection and cultivation, and on the manuring of padi. In future years there must be a steady distribution of seed from improved varieties, so that there may be a constant improvement in the quantity and quality of padi produced in this country. This is obviously a matter of co-operation between the department and the grower. At the Kuala Pilah Experimental Station in the early part of 1917, about 1,000 gantangs of padi seed was produced, but it was not possible to distribute the whole amount for seed purposes. The natives were unaware of the work done on these varieties, and except very locally, there was not a great demand for the seed. During the year 1917, work has been done further towards the improvement of padi, and also in relation to other crops, such as tobacco. Both these crops then, were ready for a certain amount of acceptance by the Malays. The following is an account of the way in which this object was attained.

It was recognized as a physical impossibility, sufficiently to interest the Malays by visiting their kampongs, that would produce but a passing interest. It became necessary that they should see the results for themselves. The Malay is very susceptable to ocular demonstration. To report to a Malay that one had obtained a yield of say 500 gantangs per acre, does not produce the impression made by pointing to a sack full of padi and saying, "that sack of padi was obtained from one lopak*." Incidentally, it does not always occur to the Malay to enquire the size of the lopak.

It may now be claimed that some advance has been made regarding the advertising of the departmental work on padi and tobacco.

By arrangement with the various District Officers, the latter chose from their districts the best Malay chiefs, generally penghulus, lembaga or Dato, and instructed them to proceed to Kuala Pilah on the 27th November, 1917, for the purpose of seeing the experiments in progress at that station. In this way a party of 48 Malays met at Kuala Pilah, representing Negri Sembilan and Pahang as follows:

Negri Sembilan.—Seremban, 12; Kuala Pilah, 12; Tampin, 4; Rembau, 3; Jelebu, 4; Port Dickson, 2.

Pahang.—Kuala Lipis, 2; Temerloh, 5; Pekan, 4.

On the 27th, they were taken to the padi experiment ground, three miles from Kuala Pilah, and before viewing the padi, were told of the objects of the work, and the results so far obtained. The padi, then being harvested, was inspected. Firstly, 45 varieties of padi, growing for selection tests, and many not yet ready for distribution, showing a great variation of growth, size and yield. Secondly, following a discussion on the best method of making a padi nursery, in which several penghulus stated the views held in their mukims, the party were shown experiments conducted to test the effects of manuring the nursery, and to find the variation in yield resulting from using a wet and a dry nursery. Further, they were shown experiments on the manuring of padi. The water systems used in Negri Sembilan were explained to those who were not acquainted with them, also the instruments used locally for the cultivation and harvesting of padi. It is worth remarking that most of the Malays had note-books in which they entered an account of everything they saw.

On the 28th, the party proceeded to Juasseh, 8 miles from Kuala Pilah, where there is a newly established fruit nursery, and where considerable work has been done this year in the introduction of new varieties of tobacco. The party first saw Indian mango grafts, and the method of grafting was explained, with the help of pictures. Indigo growing, its advantages to the soil, and the method of preparing indigo blue, was explained and illustrated.

Great importance was made of the trials of tobacco that have been carried out this year. It was thought that now, when the price of tobacco was high, the time was propitious for encouraging the growing of tobacco by natives, for their own consumption. Some 50 varieties of tobacco, obtained from various sources, are

* A "lopak" is one of the small divisions of which a padi-field is composed.

growing at Juasseh, and the party inspected these varieties in the field, and noted the variations that occur. All the steps in the cultivation of the crop were explained, the method of drying and curing the leaf, and the selection of the seed.

The above account covers very briefly the ground of the progress of the party. What then, were the objects gained? It is perhaps too early to dogmatize freely on the results, but there is evidence that the visit may have been beneficial. The fact of the Malays taking notes indicates a genuine interest in the proceedings. Furthermore it is now certain that there will be no difficulty in disposing of any amount of padi seed in the coming season, in fact, the writer had several requests for certain varieties of padi seed which were thought especially suitable for particular conditions. Application was made for tobacco seed sufficient to supply 250 Malays with seed. The system adopted was to make up in small envelopes sufficient seed for one Malay to plant. The writer was assured that there would follow further requests for seed, as soon as the penghulus had discussed the matter in their mukims.

Not the least valuable result has been the opportunity it has provided for the interchange of ideas amongst the members of the party. It has further demonstrated to them that their co-operation is necessary, and that the success of the native industries depends largely upon their individual labour.

Is this system of demonstration to responsible Malays capable of a wider application? It is more than possible that good may result if chosen Malays were conducted round Government estates and plantations, that they could see various crops grown, the systems of cultivation employed, and have rotations, cover-crops and such like matters explained to them. The writer is of opinion that such visits, if arranged and conducted with care, would go far towards the popularizing of agriculture amongst Malays.

COCONUT BUTTER.

A few months ago, an anonymous correspondent in one of the local newspapers contributed a note on the preparation of coconut butter in the West Indies, with the suggestion that the Department of Agriculture, Federated Malay States, might take the matter up.

With regard to the preparation of coconut butter for edible purposes, as a substitute for ordinary butter, it is not likely that this will be adopted, unless it is impossible to obtain the latter, except by those who do not object to the flavour which is almost invariably associated with vegetable butters, unless specially treated by special methods known only to large manufacturers of such products.

For the information, however, of those who may be interested and who may not have access to the original article dealing with the preparation of coconut butter, the following details are given (abstracted from *The Agricultural News*, Vol. XVI, No. 403, 6th October, 1917).

Dry coconuts are peeled and grated and hot water poured over the grated material, in the proportion of about one pint of water for each nut and the mixture allowed to stand for about one hour. The mixture is then strained through coarse muslin, squeezing out all the liquid as completely as possible. The strained liquid is then set aside overnight, or for a few hours, if made during the day, by which time the oil will have settled on the surface of the water. The oil is skimmed off and placed in a churn or wide-mouth jar, and a teaspoonful of salt is added for each nut used. The jar is then stood on ice or placed in an ice chest, till thoroughly cold. The oil is then churned by shaking the bottle or otherwise, and the butter forms in about 10 minutes. The butter is removed on to a cloth, moulded to shape and kept in an ice chest. If ice is not available, the butter can be made early in the morning and kept solid by placing it in a metal dish, inside a porous pot, set in the breeze, with a damp cloth over the pot.

Some prefer to boil the grated nut, after the water is added. A nut yields about $\frac{1}{4}$ lb. of butter; this, of course, depends on the size of the nut and its oil content.

Another method is to add a teaspoonful of good tin butter to the cream before churning. The butter then forms more quickly and has the colour of ordinary butter. (Note.—An extract of Annatto from the plant *Bixia Orellana*, which contains a yellow colouring matter, may also be used to give the colour of ordinary butter.) As the coconut butter does not keep more than about two days, it should be made in small quantities, as required. It is said to be a good substitute for ordinary butter for both table use and cooking.

The above method is similar, as far as the extraction of the oil is concerned, to that used in making the coconut emulsion for the pudding known as "Gula Malacca," except that in the latter case, the grated nut is treated with cold water. Coconut oil is also made locally in a similar manner, by the boiling process, but in this case the cream is skimmed off after churning or squeezing and the cream placed in a pot and heated gently till the water is driven off.

As is well known, coconut oil is liquid at the ordinary shade temperature in Malaya during the day, and is only solid early in the morning, hence the necessity of keeping the butter on ice or in a cool place.

B. J. E.

SUMMARY OF LOCUST WORK FOR THE 3rd QUARTER, 1917.

By F. W. South.

Staff Changes.

THE arrangement suggested in the report for the 2nd quarter was approved, and on 1st August Mr. Lyford took charge of the locust work in the Negri Sembilan; on 7th September he took over the work in Johore from the Assistant Agricultural Inspector, so that the Assistant Agricultural Inspectors in the Negri Sembilan and Johore are now both at liberty to give all their time to inspection work on estates and small holdings and Mr. Lyford is in charge of all the locust work. One mandor in the Batu Anam District of Johore was paid off and it is expected that a further re-arrangement of the staff, involving considerable reductions in Malacca and Johore will become possible during the last quarter.

Summary of Results.

There were no locusts reported in the Negri Sembilan and Malacca also was free of them for most of the quarter, but in July a flying swarm from the Sungei Mati District of Johore laid eggs at Lanchang quite near the boundary. The resulting hoppers were all destroyed between 8th and 28th July, 113 swarms being accounted for. One other flying swarm crossed the boundary but returned to Johore after two days.

During July and August about 10 flying swarms were reported at various places in northern Johore. Eggs were laid during July at Bekok near Tangkak but were drowned by heavy rain and floods. During September Mr. Lyford made a careful search for swarms in Johore and as a result came to the conclusion that only two or three swarms remained anywhere. Two of these swarms in the Sungei Mati District were about to lay eggs. If the hoppers hatching from these eggs are all successfully destroyed it seems very probable that no locusts will remain in Johore or elsewhere by the end of the year. It certainly seems that the end of the work is now in sight.

MINUTES OF MEETING OF THE PLANTERS' ASSOCIATION OF MALAYA,

held at 12, Market Street, Kuala Lumpur, on 19th December, 1917, at 11 a.m.

PRESENT:

The Honourable Mr. R. C. M. Kindersley (*in the Chair*)
„ H. C. E. Zacharias (*Secretary*)

and the following DELEGATES:

From Batang Padang D.P.A.	...	Messrs. J. H. Allard and H. Gordon Graham.
„ Batu Tiga D.P.A.	...	Mr. G. H. Bennett
„ Central Pahang P. A.	...	„ P. J. A. Williams
„ Central Perak „	...	„ J. S. Ferguson
„ Kajang D.P.A. ...	...	Messrs. E. N. T. Cummins, E. G. Leyne and O. P. Dakeyne
„ Kapar „ ...	...	Messrs. L. Mooijaart and N. B. Bevan
„ Klang D.P.A. ...	...	„ E. B. Prior and C. A. Buxton
„ Kuala Langat D.P.A.	...	H. O. Kennedy, G. O. W. Symons and G. E. D. Fenningworth
„ Kuala Lumpur D.P.A.	...	Mr. F. G. Harvey and Lt.-Col. A. J. Fox
„ Kuala Selangor D.P.A.	...	Messrs. Thos. H. Menzies, R. S. McCulloch, H. C. Mustard and L. A. Irving
„ Lower Perak P.A.	...	Messrs. W. Vaughan Smith and D. Carmichael
„ Malay Pen. Agl. Assn.	...	Mr. J. W. Kennedy
„ Negri Sembilan P.A.	...	Messrs. J. D. McCulloch, C. Ritchie, G. W. Hingston, Geo. Grant and V. A. Tayler
„ Taiping P.A. ...	...	Mr. W. S. Cookson
„ Ulu Selangor D.P.A.	...	Messrs. W. de L. Brooke and N. H. Dakeyne

HONORARY MEMBERS—The Honourable Mr. J. R. O. Aldworth (Controller of Labour) and Mr. L. Lewton-Brain (Director of Agriculture).

VISITORS—Messrs. F. M. Whole, H. B. Dudley, A. Mahler, Noel Fisher, K. Crompton, T. Donaldson, M. D. Fallon, C. R. Ferrers, A. C. Hayton, W. H. Bragg, G. C. Bailey, H. Getz, Dr. Malcolm Watson and B. J. Eaton (Agricultural Chemist, F.M.S.).

---

1. The minutes of the meeting held on the 20th of October, 1917, having been taken as read, Mr. Prior points out an error on page 2, line 6.

Subject to the deletion of the word "not" in the place indicated the minutes are confirmed.

2.—WAR RELIEF.

The SECRETARY reports having circulated the Chairman's appeal decided upon at the last meeting. To date the response to this had brought in $1,185.99 per mensem, as follows:

MONTHLY SUBSCRIPTIONS RESERVED FOR 30TH NOVEMBER, 1917.

Armstrong, H.	$25.00
Begg, N. C.	5.00
Bell, C.	25.00
Bennett, G. H.	25.00
Barnet, G. P.	25.00
Barwise, D. R.	18.00
Birkemose, F.	20.00
Brown, T. L.	10.00
Buxton, C. A.	15.00
Campbell, F. M.	25.00
Careless, H. G.	12.00
Case, W. R.	15.00
Coppens, P.	10.00
Croal, T. Gordon	20.00
Crush, C. N.	10.00
Cumming, T. J.	25.00
Dakeyne, O. P.	25.00
Darke, A. E. G.	20.00
Dodgson, R. H.	10.00
Douglas, J. Bloomfield	16.65
Dukes, M. B.	10.00
Estrange, G. R. L.	20.00
Farrell, M.	10.00
Fisher, N.	30.00
Fraser, W. D.	20.00
Grant, G. A.	20.00
Hargreaves, J.	10.00
Harvey, F. G.	20.00
Harvey, T. R.	10.00
Hastings, P. E.	10.00
Irving, L. A.	30.00
Jeavons, F. C.	25.00
Josselyn, E. W.	20.00
Kinder, C.	10.00
Kindersley, Hon'ble Mr. R. C. M.	25.00
Ladell, R. G.	20.00
MacCallum, R. A. (per D. R. Barwise)	11.00
Mackay, C. H.	18.00
Maguire, C.	10.00
McCrow, D. W.	10.00
McVitie, D. D.	15.00
Mercer, R. W. G.	10.00
Moraes, H. F.	10.00
More, Thomas	25.00
O'Brien, W. L. R.	25.00
Okeden, W. P.	10.00
Palmer, S. B.	22.00
Paterson, A. F.	15.00
Paul, Cecil	5.00

Prior, E. B.	$15.00
Rasnussen, G.	10.00
Richard, H. W.	20.00
Ritchie, C.	15.00
Robertson, J. A.	10.00
Ryves, V.	10.00
Sansom, P. N.	15.00
Scott, J. N.	13.33
Smith, C. Hammond	25.00
Smith, M. Sharpe	25.71
Spooner, A. F.	20.00
Stonehewer, R. S.	17.00
Tobutt, K.	10.00
Trollope, F. A.	15.00
Tyler, E. W.	20.00
Wakefield, E. C.	20.00
Webb, C. M.	5.00
Wiggins, T. G.	10.00
Wilkinson, H. B.	20.00
Will, R. W.	8.00
Williams, P. J. A.	24.30
Willis, A.	10.00
Zacharias, H. C. E.	15.00
Total	$1,185.99

In addition to these amounts which would be collected monthly through the Banks, the subscriptions received to date through the Constituent Associations amounted to $24,949.07, as follows:

Batang Padang	$ 505.00
Batu Tiga	1,961.00
Central Pahang	485.00
Central Perak	1,443.00
Kajang	884.00
Kapar	355.47
Klang	2,400.00
Krian	1,191.46
Kuala Langat	670.00
Kuala Lumpur	2,023.18
Kuala Selangor	310.50
Lower Perak	2,293.56
Negri Sembilan	3,250.00
Taiping	2,619.21
Ulu Selangor	1,219.62
Total F.M.S.	$21,611.00
Penang and Province Wellesley	136.07
Johore	2,859.00
Kedah	343.00
Grand Total	$24,949.07

The total amount raised since the inception of their War Relief Fund therefore amounted to $98,974.42.

He had also received from Sir William Taylor statement of accounts for the 3rd quarter of the year as follows:

FEDERATED MALAY STATES WAR RELIEF FUND, SCHEME No. 2. STATEMENT OF ACCOUNTS 1ST JULY TO 30TH SEPTEMBER, 1917.

Receipts.	Amount. £	s.	d.	Payments.	£	s.	d.	Amount. £	s.	d.
Balance from last account...	20,266	13	3	Grants:						
Remittances from the Planters' Association of Malaya	1,000	0	0		14	2	7			
Interest on Bank Deposits	39	9	11		9	0	0			
Interest on Exchequer Bonds	45	0	0		6	0	0			
Discount on Treasury Bill matured	60	0	0		15	0	0			
					25	0	0			
					25	0	0			
					25	0	0			
					50	0	0			
					10	10	0			
								179	12	7
				Bank charges				—	2	0
				Balance carried forward				21,231	8	7
	21,411	3	2					21,411	3	2

The Balance of £21,231 8s. 7d. is disposed of as under:	£	s.	d.
Five per cent. War Loan (£12,000) at cost ...	11,400	0	0
Six per cent. Exchequer Bonds	2,000	0	0
Treasury Bill (£1,000) at cost	976	9	0
Deposits in Chartered Bank	6,000	0	0
Balance of current account in Chartered Bank ... ... £ s. d. 914 16 4			
Less outstanding cheques 59 16 9			
	854	19	7
	21,231	8	7

(Sd.) W. T. TAYLOR,
25th October, 1917.

I hereby certify that I have audited the above statement of receipts and payments with the books and vouchers of the Fund and find the same to be correct.

The grants have all been duly authorized by the Committee.

(Sd.) A. H. CULLEN,
Chartered Accountant,
Honorary Auditor.

73, BASINGHALL STREET, E.C.,
29th October, 1917.

As would be seen there was a balance in hand in London on 30th September of £21,231-8-7. Reverting to the minutes of December, 1916, they would find that the best quotation for an annuity of £100 for 30 years was £1,772, so that the balance now available would enable them to purchase not more than twelve such annuities, and he thinks that this was a complete answer to those who considered that the Fund had already all the money that was needed.

Mr. KINDERSLEY says they would see from what the Secretary had told them that a considerable commencement had been made towards placing the Fund in a satisfactory position, but it could only be looked on as a commencement. A very special effort was required to carry out their present aims, and it must be made now. If they allowed the opportunity to pass now he felt sure that it would be impossible to revive the Fund later on. He would ask each individual planter to use his influence to make the present appeal a success before the close of the year. He would suggest that a complete list of subscribers arranged according to districts should be published early in January. A member had kindly offered to pay the expenses connected with sending a copy of the accounts to each subscriber in future, and he would propose that they should have this done.

Mr. TAYLER agrees that it would be advantageous to publish the names and the amounts.

Mr. PRIOR remarks that as there were said to be difficulties of the Relief Committee getting into touch with the men from here in need of relief, he had proposed at a recent meeting of the Klang District Planters' Association that each man before joining up should register particulars with his local Association who could then forward these to the Secretary of the Planters' Association of Malaya.

The SECRETARY reports in this connection that a proposal had been sent in by the Ulu Selangor District Planters' Association as follows:

"With reference to administration of the Fund there was some further discussion at our meeting when members pointed out that there were still no easy means of ascertaining if cases had been enquired into or not, the Association passed the following resolution which I shall be obliged if you will lay before the local Committee administering the Fund for their consideration and adoption if possible.

'That an alphabetical register be kept in Kuala Lumpur available to the public giving the names of everyone who has left Malaya to join the Forces.

'That as casualties occur they should be marked as such on the register.

'That opposite the name of such casualty the words 'Enquired into' be inserted in every case that has received the attention of the London Committee."

He had made enquiries from the Hon'ble Mr. Nutt and understood that Mr. Hale compared regularly the latest *Malay Mail* Roll of Honour with every casualty list as it was published. As no official statistics had been compiled, the *Malay Mail* list was the most complete one available. Originally he had started a card index of all men but in the end this had become merely a duplicate of the *Malay Mail* list.

Mr. BROOKE says that the only other point which the Ulu Selangor resolution asked for was that all investigations should be registered in the Secretary's card index and he hoped that this would be done.

The sense of the meeting is then taken and the Secretary is instructed to ask Sir William Taylor to send him a list of all cases enquired into.

Mr. FERGUSON supports the proposal that names as well as amounts should be published in future. They were doing that already in his district. Personally he thought that it would be a better system if each local Secretary continued to collect subscriptions and send them to the Secretary of the Planters' Association of Malaya rather than that individual subscriptions should go direct to him.

Mr. RITCHIE says that he originally suggested at the last meeting that amounts should be left out, but if the publication of the amount subscribed would encourage others to subscribe he certainly would be quite in favour of doing so.

Mr. VAUGHAN SMITH informs the meeting that Lower Perak had decided unanimously against subscriptions being sent direct to the Planter's Association of Malaya.

Mr. BENNETT says that since the new scheme had come into operation their collections had gone down.

Mr. MOOIJAART reminds the meeting that the local Secretaries would in any case see all Bankers' Orders, but he thinks it best if it was left optional to each individual to send his subscription either direct through the Bank or through his District Association.

Eventually Mr. HINGSTON proposes that lists of all subscriptions with their amounts arranged according to each district be published.

Mr. PRIOR seconds the proposal which is carried with one dissentient.

3.—RUBBER EXPORT DUTY.

Mr. KINDERSLEY says that the question of the desirability of adopting the Singapore market prices as a basis on which to calculate the duty on rubber was discussed at the meeting of the Federal Council in November, when His Excellency the High Commissioner promised to reconsider the matter. He had since had an interview with Sir Edward Brockman, and he had informed him that the Government would be prepared to adopt the Singapore market price as the basis provided that a heavy drop in revenue did not result, as that might have the effect of reducing the amount

available for war contribution. He had informed him that the Government would be glad to consider any scheme that the planting community wished to put forward. He believed that there was a general desire that the Singapore market price should be adopted, because the method of taking the London market price had become inequitable. Only a small proportion of the output can be sent to London, and that consisted of the produce of those companies who were in a position to obtain a limited amount of shipping space. The companies who had not previously been in the habit of shipping to London were debarred from that market entirely, and yet had to pay duty on the London price, which for them was unobtainable.

The natural market for the country's produce was Singapore, and in normal times no doubt the Singapore price would approximate to the London or American prices. He did not think that they were likely to quarrel with the Government over their desire to make the war contribution as full as possible, and he would suggest that, if as the effect of basing the rubber duty on Singapore prices the present special war taxes from rubber and other sources proved inadequate, an extra export tax could be imposed on rubber to meet the deficiency, without altering the rate of the ordinary rubber duty.

He would now like to hear what proposal members would like to put forward—he personally would favour an extra War Tax as this made the tax purely a temporary one.

Mr. Kennedy thinks that the different grades should be valued separately and considers the present flat rate quite wrong.

Mr. Stewart understands that the Chairman is in favour of an extra surtax in addition to the present tax, and surtax, and would like to have an indication as to the amount required.

Mr. Cummins cannot agreee that more taxation was needed as the young Companies were already very unfairly and heavily taxed. In his opinion the tax should be on a graded scale, just as the tin-ore paid export duty on the assumption that it contained 68 per cent. of the metal whilst in reality it contained about 73 per cent.

Mr. McCulloch holds strongly that there were two questions involved in this subject which should be strictly kept separate; the one being the amount of war contribution required and the other the basis of valorisation. The present duty was one of $2\frac{1}{2}$ per cent. and 5 per cent. on the *value* of rubber. This had been approved of by the whole country and the Government in levying the tax were in a position of trust. It therefore seemed to him quite wrong for the Government to valorise rubber in such a manner that the duty paid was no longer $2\frac{1}{2}$ or $7\frac{1}{2}$ but probably $3\frac{1}{2}$ and $8\frac{1}{2}$ of the actual value. The whole country had been unanimous in their desire of contributing to the war and it seemed to him therefore doubly necessary that the Government in a matter of this nature should do things quite openly and above board.

Mr. Tayler feels sure that the question was a difficult one and hardly thinks that this meeting would be able to formulate a new proposal for the consideration of the Government. He therefore thinks that the matter had better be referred to the Standing Committee to report to the Association at the next General Meeting.

Mr. KENNEDY would like to add that the proposal of the Standing Committee should be circulated amongst the Constituent Associations before the next General Meeting.

The amendment is incorporated in the proposal which is seconded by Mr. MCCULLOCH and carried unanimously.

Mr. CUMMINS rises to ask whether in the case in which War Tax had been levied by mistake this had been refunded.

Mr. IRVING understands that the refund had been made.

4.—INDIAN LABOUR.

(*a*).—BRIBERY.

The SECRETARY reads the following letter:

"KUALA LUMPUR,
"*24th October, 1917.*

"SIR,

"I have the honour to inform you that complaints are rife regarding the prevalence of bribery in India in connection with the emigration of coolies to this country.

"As you are aware, shipping facilities are greatly restricted and as a consequence a great number of would-be emigrants are unable to carry out their intention. It now appears that the situation is being exploited by unscrupulous subordinates who extort bribes from those who are fortunate enough to obtain shipping accommodation.

"The matter was brought up at the last meeting of our Association, when I was instructed to lay the matter before you and to invite your good offices in having a stop put to the present unsatisfactory state of affairs.

"I have, etc.,
"(Sd.) H. C. E. ZACHARIAS,
"*Secretary.*

"CONTROLLER OF LABOUR,
"FEDERATED MALAY STATES,
"KUALA LUMPUR."

The CHAIRMAN invites the Hon'ble Mr. Aldworth to speak on the subject.

Mr. ALDWORTH is afraid that the subject was a very difficult one. All he could say was that everything possible was being done.

(*b*).—MIDWIVES.

The SECRETARY reads the following correspondence:

"KUALA LUMPUR,
"*24th October, 1917.*

"Sir,

"I have the honour to acknowledge receipt of your letter 430 of the 4th instant.

"In reply I am instructed to ask for a definition of the term 'trained' midwife.

"I have, etc.,
"(Sd.) H. C. E. ZACHARIAS,
"*Secretary.*

"CONTROLLER OF LABOUR,
"FEDERATED MALAY STATES,
"KUALA LUMPUR."

"KUALA LUMPUR,
"*1st December, 1917.*

"No. 447/17.

"SIR,

"In reply to your letter of 24th October, in which you ask for a definition of the term trained midwife, I have the honour to inform you that the Principal Medical Officer informs me that midwives who produce evidence of having been trained in a recognized institution and possess certificates of competency are designated by that term.

"2. The General Hospital, Singapore, is an officially recognized institution, and the Rajah Sir Ramasamy Mudaliar Lying-in-Hospital, Madras, is, I understand, another. Certificates of efficiency are also granted at the General Hospital, Kuala Lumpur, after a period of training.

"I have, etc.,
"(Sd.) J. W. CONDALL ELLIS,
"*for Controller of Labour, F.M.S.*

"THE SECRETARY,
"PLANTERS' ASSOCIATION OF MALAYA,
"KUALA LUMPUR."

Mr. KINDERSLEY hopes that as trained midwives become available, planters would increasingly go on employing same.

Mr. TAYLER says that it was evident that the supply was quite insufficient. At present there was no obligation on estates to employ only trained midwives, but apparently there was a prospect of such a rule being made. With the present supply, however, it was obvious that even in two or three years there was no chance of obtaining the number required, say 600 midwives.

Mr. ALDWORTH quite agrees with Mr. Tayler that it would take time to obtain 600 midwives. There was no doubt that the Madras Government would insist on their employing them but the point was had genuine attempts been made to obtain not 600 but even two or three. He might say that Government Institutions had no difficulty in obtaining a fair number from the Immigration Department. What was needed above all was that a start be made before the Madras Government brought further pressure to bear.

Mr. STEWART does not think that 600 would be required, as presumably one for each group hospital would suffice.

Mr. KENNEDY would like enquiries to be made as to the number of midwives that local institutions could train in a year.

Mr. RITCHIE agrees that the employment of trained midwives was in the interests of everybody and he thinks that if local institutions could do so, the best plan was to get their present untrained midwives trained there.

Mr. PRIOR enquires about castes. Will they be expected to have five midwives if their labour force consists of five castes ?

Mr. TAYLER suggests that all Constituent Associations should be circularized inviting all members to take steps in the matter before Government may find it necessary to make the employment compulsory, and that they be advised to write to the Emigration Agent at Madras accordingly.

Mr. MOOIJAART agrees the proposal, but would add that at the same time Constituent Associations be asked what steps had been taken already in the matter as he believes that some Associations had already done so. It went without saying that everybody would like to see the nursing facilities improved.

Mr. CARMICHAEL asks what accommodation these midwives would require ?

LT.-COL. FOX thinks that point might safely be left to the midwives.

(*c*).—CHOULTRY.

The SECRETARY reads the following letter from Commander Mills :

"*12th November, 1917.*

"DEAR MR. ZACHARIAS,

"An effort is being made to try and provide for the accommodation of coolies arriving at Port Swettenham to join the steamers on their return to India.

"2. Owing to various reasons the coolies are here for several days before the vessel arrives and there is nowhere for them to go. In fine weather it is not so bad, but in wet weather they have a very bad time. In any case for many reasons it is not a good thing to have several hundred people camping in the public streets.

"3. There are a few lodging houses but not enough to accommodate all the coolies and owing to questions of caste, most of the coolies are not allowed to enter the lodging houses.

"4. The idea is to erect a choultry with kitchen, bath-rooms, and to have a temple attached.

"5. As coolies come here to embark from Selangor, Negri Sembilan, Pahang, Malacca and the South of Perak, I have been asked to approach you as to your views as to whether this is a matter the Planters' Association of Malaya would be inclined to help with by bringing the objects of my Committee to the notice of the members attending the next meeting of the Association.

"6. It is thought that a subscription of $50 or $100 according to the size of the estate would be enough to meet the expenses of erection of this premises required.

"7. The Government has been good enough to give a piece of land and has granted the use of one of the sheds at the depôt until our scheme is in hand.

"Yours truly,

"(Sd.) JOHN F. MILLS,

"*Commander, R.N.R.*

"*President, Port Swettenham Indian Choultry Committee.*

"To SECRETARY,

"PLANTERS' ASSOCIATION OF MALAYA,

"KUALA LUMPUR."

Mr. BROOKE thinks that the suggestion was a good one but had surely better be referred to the Indian Immigration Committee.

Mr. ALDWORTH reminds the meeting that the Indian Immigration Committee were by law not authorized to spend their money except on certain very definite lines one of which certainly was not that of facilitating the return of coolies to India.

Mr. TAYLER thinks that there would be great difficulties in collecting the money and the Indian Immigration Committee was absolutely the only body to do this and afterwards to administer and maintain the choultry.

Mr. PRIOR would like the choultry to be entirely a Planters' institution.

Mr. HARVEY observes that the present state of affairs of overcrowding at Port Swettenham was quite temporary as it was only the natural consequence of the shortage and irregularities of steamers. He feels sure that as soon as the present exceptional circumstances ceased, there would be no further need for such a choultry.

Mr. KINDERSLEY thinks that it was not clear why more than merely temporary buildings were required. He would suggest that the matter be referred to the Standing Committee.

Agreed.

5.—JAVANESE LABOUR.

The SECRETARY reads a letter dated 7th November, 1917, received from the R.G.A.

Mr. MCCULLOCH proposes that the Standing Committee be asked to take such action as they deem advisable.

Lt.-Col. FOX seconds the proposal which is carried unanimously.

6.—CHINESE LABOUR.

Mr. MCCULLOCH would like to know who the employer of a Chinese contract tapper was—*i.e.*, the contractor or the estate employing the contractor.

This was a point on which apparently the Medical, Labour and Judicial Departments of the Government differed. As a Magistrate had recently held that such a tapper was not employed by the estate, he would like the Legal Advisers of the Association to be consulted on the subject.

Agreed to.

7.—TODDY.

The SECRETARY reads the following correspondence:

"KUALA LUMPUR,

"*24th October, 1917.*

"SIR,

"I have the honour to acknowledge receipt of your letter 3987 of the 3rd inst. and regret that the Government is not prepared to publish the returns suggested in our second resolution.

"The question of toddy was again fully discussed at our last meeting held on the 20th inst. which agreed that the crucial point of the whole question lay in the system of putting up licences for toddy-shops to public tender.

"A very interesting and successful experiment has recently been made in the Krian district by Gula Estate, for further details of which I would refer you to a report made by the manager to the District Officer. A copy of this was printed as an appendix to our last minutes, copy of which I now beg to enclose.

"With this concrete example before them, the meeting unanimously passed the following resolution which I now have the honour to submit to your favourable consideration:

"That this Association views with considerable apprehension the continuance of the system of calling for tenders for toddy-shop licences. Also it considers it extremely undesirable that the toddy traffic of the whole country should continue to be under the entire control of Tamils as at present.

"It strongly urges the necessity for more responsible control, and suggests that every estate should be encouraged to establish a toddy-shop of its own, if possible, so that there would be no inducement for coolies to leave their own estate and visit toddy-shops on the public road.

"To obtain efficient and reliable control, the Association is strongly of opinion that these shops should be placed under the entire control of the manager of each estate, on the following conditions:

"That Government take a fair percentage of the gross sales as rental.

"That all profits from the sale of toddy be expended for the benefit of the labour force.

"That separate accounts be kept so that all transactions may be clearly shown and that these be open to inspection by Government officials at all times.

"It is urged that if toddy-shop licences were granted on these conditions, that private profiteering would be entirely eliminated, that the most efficient control would be effected, and that the agricultural labour force of the country would benefit to no inconsiderable extent by the change of system recommended.

"That pending a decision all licences for 1918 be granted from quarter to quarter only.

"That the above resolutions be forwarded to the Governments of the Federated Malay States, Straits Settlements and Kedah.

"I have, etc.,

"(Sd.) H. C. E. Zacharias,

"*Secretary.*

"Under Secretary,

"Federated Malay States,

"Kuala Lumpur."

"Kuala Lumpur,

"*26th October, 1917.*

"No. 3987/17.

"re the system of calling for tenders for toddy-shop licences.

"Sir,

"I have the honour to acknowledge receipt of your letter of the 24th October, 1917, the contents of which are receiving attention.

"I have, etc.,

"(Sd.) H. Fraser,

"*for Under Secretary to Government, F.M.S.*

"The Secretary,

"Planters' Association of Malaya,

"Kuala Lumpur."

"KUALA LUMPUR,

"*24th October, 1917.*

"SIR,

"I have the honour to inform you that the question of toddy was again fully discussed at our last General Meeting held on the 20th instant which agreed that the crucial point of the whole question lay in the system of putting up licences for toddy-shops to public tender.

"A very interesting and successful experiment has recently been made in the Krian district by Gula Estate, for further details of which I would refer you to a report made by the manager to the District Officer. A copy of this was printed as an appendix to our last minutes, copy of which I now beg to enclose.

"With this concrete example before them, the meeting unanimously passed the following resolution which I now have the honour to submit to your favourable consideration :

> "That this Association views with considerable apprehension the continuance of the system of calling for tenders for toddy-shop licences. Also it considers it extremely undesirable that the toddy traffic of the whole country should continue to be under the entire control of Tamils as at present.
>
> "It strongly urges the necessity for more responsible control, and suggests that every estate should be encouraged to establish a toddy-shop of its own, if possible, so that there would be no inducement for coolies to leave their own estate and visit toddy-shops on the public road.
>
> "To obtain efficient and reliable control the Association is strongly of opinion that these shops should be placed under the entire control of the manager of each estate, on the following conditions :
>
> "That Government take a fair percentage of the gross sales as rental.
>
> "That all profits from the sale of toddy be expended for the benefit of the labour force.
>
> "That separate accounts be kept so that all transactions may be clearly shown and that these be open to inspection by Government officials at all times.
>
> "It is urged that if toddy-shop licences were granted on these conditions that private profiteering would be entirely eliminated, that the most efficient control would be effected, and that the agricultural labour force of the country would benefit to no inconsiderable extent by the change of system recommended.
>
> "That pending a decision all licences for 1918 be granted from quarter to quarter only.

"That the above resolution be forwarded to the Governments of the Federated Malay States, Straits Settlements and Kedah.

"I have, etc.,

"(Sd.) H. C. E. ZACHARIAS,

"*Secretary.*

"LETTER ADDRESSED TO THE COLONIAL SECRETARY, S.S., AND TO THE ADVISER TO KEDAH GOVERNMENT, ALOR STAR."

"SINGAPORE,

"*28th October, 1917.*

"No. 8753/17.

"SIR,

"DISCUSSION OF TODDY-SHOP LICENCES.

"I am directed to acknowledge the receipt of your letter of the 24th instant and to inform you that the contents are receiving attention.

"I have, etc.,

"(Sd.) R. CRICHTON,

"*for Colonial Secretary, S.S.*

"THE SECRETARY,

"PLANTERS' ASSOCIATION OF MALAYA,

"KUALA LUMPUR."

"ALOR STAR, KEDAH,

"*6th November, 1917.*

"No. 3227/35.

"SIR,

"I have the honour to acknowledge the receipt of your letter of the 24th October regarding the question of the toddy-traffic. As the arrangements now in force will last until the end of the current Mahommedan year it is not possible to introduce any considerable changes immediately, but managers of estates will be encouraged to maintain their own estate toddy-shops as far as possible. I may say that owing to the fact that there are at present only two Medical Officers in the State it would be impossible at the present time to exercise supervision over any considerable number of toddy-shops.

"I have, etc.,

"(Sd.) G. A. HALL,

"*Ag. Adviser to the Kedah Government.*

"THE SECRETARY,

"PLANTERS' ASSOCIATION OF MALAYA,

"KUALA LUMPUR."

"KUALA LUMPUR,
"*28th November, 1917.*

"No. 343A/17.

"SIR,

"I have the honour to remind you of my letter 343/17 of 10th August, 1917, on the subject of the practicability of arranging different pay-days for different estates in connection with the question of toddy. I should be glad to learn whether you are yet in a position to furnish me with any information as to the views of your Association upon this subject.

"I have, etc.,
"(Sd.) J. W. C. ELLIS,
"*for Controller of Labour, F.M.S.*

"THE SECRETARY,
"PLANTERS' ASSOCIATION OF MALAYA,
"KUALA LUMPUR."

"KUALA LUMPUR,
"*7th December, 1917.*

"SIR,

"I have the honour to acknowledge receipt of your letter 343A of the 28th of November which has been considered by my Standing Committee. In reply I am to say that the suggestion of making a universal rule, so as to arrange different pay-days for different estates in connection with the question of toddy, does not recommend itself to my Committee.

"I am to point out that the system in many districts already exists and that in many other districts toddy-shops serve only one estate. On the other hand, there is a great number of other districts where one toddy-shop serves such a large number of estates that it would be quite impracticable to adopt the suggestion universally, even if the legal obligation *re* pay-days was relaxed.

"I have, etc.,
"(Sd.) H. C. E. ZACHARIAS,
"*Secretary.*

"CONTROLLER OF LABOUR,
"FEDERATED MALAY STATES,
"KUALA LUMPUR."

"KUALA LUMPUR,
"*17th December, 1917.*

"No. 343A/17.

"SIR,

"I have the honour to acknowledge the receipt of your letter of the 7th instant with reference to pay-days for which I thank you.

"I have, etc.,
"(Sd.) J. W. C. ELLIS,
"*for Controller of Labour, F.M.S.*

"THE SECRETARY,
"PLANTERS' ASSOCIATION OF MALAYA,
"KUALA LUMPUR.

Mr. KINDERSLEY from personal experience believes that the Licensing Boards are really sympathetic but cannot help themselves as long as they have to comply with the present administrative rules. To his own knowledge applications on the lines of the Gula experiment had been made but no official reply had so far been received.

Mr. KENNEDY says that the Licensing Board in his district had granted licences, on the lines previously described by him, to all who had applied for them.

Mr. RITCHIE says that he also had written to his Licensing Board but so far had had no definite reply. The terms however stipulated by his Board were such that if there was any loss the estate would have to bear it which he did not think was fair.

8.—RAILWAY LIABILITY.

The SECRETARY reads the following correspondence:

"KUALA LUMPUR,
"*24th October, 1917.*

"SIR,

"I have the honour to acknowledge receipt of your letter 3073 of 7th September and to thank you for the arrangements made in respect of the 30 stations enumerated.

"I have now circularized all our Constituent Associations and find that it is a desideratum that similar facilities should be granted in respect of the following 14 additional stations—*viz.:* Jeram, Assam Jawa, Teluk Piah, Ulu Yam, Sungei Choh, Bidor, Sungkai, Trolak, Padang Jawa, Labis, Petaling, Kepong, Siliau and Mambau.

"I have, etc.,
"(Sd.) H. C. E. ZACHARIAS,
"*Secretary.*

"UNDER SECRETARY,
"FEDERATED MALAY STATES,
"KUALA LUMPUR."

"KUALA LUMPUR,
"*29th November, 1917.*

"No. 3073/17.

"SIR,

"With reference to your letter dated the 24th October, 1917, on the subject of the issue by the Railway Department of receipts at small stations for rubber delivered for despatch, I am directed to inform you that the General Manager, Federated Malay States Railways, hopes shortly to be able to give facilities, similar to those mentioned in my letter of even number dated the 7th September, 1917, in respect of the following stations:

"Jeram, Assam Jawa, Teluk Piah, Ulu Yam, Sungei Choh, Bidor, Sungkai, Trolak, Padang Jawa, Labis, Petaling, Siliau and Mambau.

"Great difficulty is experienced at present in recruiting for the Railway Police, and these facilities cannot be afforded until the General Manager, Federated Malay States Railways, is able to obtain satisfactory men.

"2. With regard to the other station mentioned in your letter, Kepong, I am to say that it is proposed to close this station for goods traffic shortly, owing to its being situated on a dangerous gradient. Accommodation is being provided at Batu village next year to take the place of Kepong.

"I have, etc.,

"(Sd.) W. MACKRAY,

"*for Under Secretary to Government, F.M.S.*

"THE SECRETARY,

"PLANTERS' ASSOCIATION OF MALAYA."

"KUALA LUMPUR."

——

"KUALA LUMPUR,

"*30th November, 1917.*

"SIR,

"I have the honour to acknowledge receipt of your letter 3073 dated yesterday and to thank you for its contents which I shall convey to the members of this Association at their next meeting.

"I have, etc.,

"(Sd.) H. C. E. ZACHARIAS,

"*Secretary.*

"UNDER SECRETARY,

"FEDERATED MALAY STATES,

"KUALA LUMPUR."

——

(Applause.)

Mr. RITCHIE hopes that the Secretary will thank the Railway Department for the courtesy with which they had met them in the matter.

Agreed to.

9.—PLANT DISEASES.

The SECRETARY reports having circularized all Constituent Associations as follows:

"KUALA LUMPUR,

"*26th October, 1917.*

"DEAR SIR,

"The question of Plant diseases was further discussed at the last meeting of this Association, when a proposal was put forward to hold a specially organized Conference of Scientists and Planters on Rubber diseases.

"As you are aware, an Annual Agricultural Conference has however already been decided upon and will be held next spring. It was therefore felt that it would be preferable to combine the two and this amendment was eventually adopted.

"At the same time, I was instructed to ask you to be good enough to urge your delegates on the General Committee of the Conference to press for sufficient time to be given to the subject of diseases and that also at least one Scientist each from Ceylon, Southern India, Sumatra and Java be secured; the Association having agreed, if necessary, to pay their expenses.

"Believe me, etc.,

"(Sd.) H. C. E. ZACHARIAS,
"*Secretary.*

He also reads the following letter:

"KUALA LUMPUR,
"*26th October, 1917.*

"SIR,

"I have the honour to acknowledge receipt of your letter 5344 of 11th September.

"In reply I am instructed to say that whilst for the duration of the War the F.M.S. Government would naturally object to any proposal entailing any serious addition to the work of their Agricultural Department, my Association feel that something could be done immediately towards an ultimate unification of all the Government Agricultural work within the Peninsula into one department.

"The complete scheme would require:

"(*a*) Colonial Legislation on the lines of "The Federal Agricultural Pests Enactment of 1913."

"(*b*) The appointment of an Inspector or Field Mycologist for each territory.

"(*c*) The training and appointment of an adequate subordinate staff to work under such Inspectors.

"Whilst it is obvious that under the present circumstances (*b*) is impossible, my Association see no reason why (*a*) and (*c*) should be deferred. On the contrary it would seem to us that if (*a*) and (*c*) was forthwith undertaken, the F.M.S. Agricultural Department, as at present constituted, would be enabled

"(1) to prepare for the appointment of Inspectors, as soon as the latter are available, since the machinery necessary to make their work effective would be ready.

"(2) to deal promptly and effectively with any serious outbreak of disease.

"Until the appointment of such Inspectors become possible, a general superintendence over, and an annual or semi-annual visit to adjoining settlements would, we believe, not seriously add to the

present work of existing officers, and for that purpose my Association beg to recommend that the territory for the time being should be assigned as follows:

"(1) *Malacca* to the Assistant Agricultural Inspector now resident in Seremban.

"(2) *Province Wellesley and Dindings* to the Inspector stationed in Perak. (At certain times in the year, the Agricultural Officer at Parit Buntar would also be able to assist).

"(3) *Singapore* to the Agricultural Inspector of the Johore Government recently stationed at Johore Bahru.

"The above recommendations of my Association refer of course to the Straits Settlements only, but we hope that if your Government were to adopt the scheme, other territories such as Kedah, etc., would readily join.

"The scheme as outlined refers only to the activities of the Agricultural Department in respect of the treatment and prevention of Pests and Diseases, that being the most urgent need of the moment; but my Association of course is persuaded that as soon as an adequate staff is available, all the other activities of such Department should likewise extend to the whole of British Malaya.

"I have, etc.,

"(Sd.) H. C. E. ZACHARIAS,

"*Secretary.*

"THE HONOURABLE,

"THE COLONIAL SECRETARY, S.S.,

"SINGAPORE."

Mr. KINDERSLEY says that as members would probably remember, a Conference on Plant diseases was to be held together with the Annual Agricultural Conference. He was aware that some members apparently considered that something should be done before then, but it was clear to him that people would not come to both, and as they wanted to have the advice of scientists and specialists it was of great importance that the arrangements should be such as to enable everybody to be present. As regards the other point—*viz.*, the amalgamation of the Federated Malay States and Colonial Agricultural Departments there was everything to be said for it and nothing against it and he felt sure that they should not rest until this matter had been achieved.

The DIRECTOR OF AGRICULTURE points out that it takes time to make the necessary arrangements for an Agricultural Conference and is afraid that the Planters' Associations had somewhat contributed to the delay in not appointing their delegates to the Committee more promptly. In this connection he ventured to make a suggestion—*viz.*, that when Constituent Associations elected their delegates, their Chairman, Secretary, etc., they should at the same time appoint their representative on the Agricultural Conference Committee. He hopes that the Conference would take place in June but a meeting of all delegates would be held early next month and it was entirely for them to say when this Conference should take place.

10.—MEDICAL.

The SECRETARY reads the following letter:

"KUALA LUMPUR,
"*27th October, 1917.*

"No. 3931/17.

"SIR,

"Referring to previous correspondence commencing with the Chief Secretary's letter 4528/16, dated the 10th November, 1916, I am directed to inform you that enquiries have been made of the Government of Madras as to whether they would be able to assist in procuring qualified men for service in the Federated Malay States and I enclose for the information of the Planters' Association of Malaya extracts from a letter which the Chief Secretary has received from the Secretary to Government, Madras.

"The qualifications which the Government of Madras consider necessary in the case of resident medical officers were set out in paragraph 3 of the Chief Secretary's letter above referred to. Assistant Surgeons trained at the Singapore Medical School will, of course, be accepted as possessing the necessary qualifications and this Government would much prefer that employment should be given to local candidates if such are available. It is not however probable that sufficient local candidates will be available for some years to come and in the meantime it will be necessary to draw on India and other countries for qualified men.

"I have, etc.,

"(Sd.) S. MCARTHUR,
"*Under Secretary to Government, F.M.S.*

"THE SECRETARY,
"PLANTERS' ASSOCIATION OF MALAYA,
"KUALA LUMPUR."

"EXTRACT FROM A LETTER FROM THE SECRETARY TO THE GOVERNMENT OF MADRAS, DATED 18TH AUGUST, 1917.

* * * *

"2. Adverting to the suggestion that the Government of Madras may be able to assist in procuring qualified men, I am to state that since the outbreak of war the supply of qualified men has not been sufficient even to meet the requirements of this Presidency, but that His Excellency the Governor in Council will be willing to co-operate with the Government of the Federated Malay States in securing qualified men if available. I am in this connection to request that you will be so good as to furnish full information about the terms on which planters are prepared to employ Sub-Assistant Surgeons and Assistant Surgeons of the Madras Presidency.

"3. I am to state for the information of the Federated Malay States the terms on which Civil Assistant Surgeons and Sub-Assistant Surgeons are employed by this Government in the Madras Presidency. Civil Assistant Surgeons draw pay according to a time scale rising from Rs. 100 to Rs. 300 with two senior selection grades

on Rs. 325 and Rs. 350. They are also paid a charge allowance of Rs. 30 per mensem when holding sanctioned appointments and special allowances varying from Rs. 25 to Rs. 100 for discharging duties of a special nature.

"They are also eligible for appointment to the independent charge of a civil station or district, when they are paid a minimum consolidated salary of Rs. 400 which rises to Rs. 500 by annual increments of Rs. 20 in five years. At present six such appointments are open to them. Sub-Assistant Surgeons draw pay rising from Rs. 30 to Rs. 100 per mensem. They are granted a charge allowance of Rs. 10 and special allowance when serving in unhealthy districts, etc. An allowance for house-rent varying from Rs. 5 to Rs. 15 is also granted when no quarters are provided. Assistant and Sub-Assistant Surgeons are granted leave and pension in accordance with the rules regulating the grant of leave and pension to other Government servants.

* * * *

The SECRETARY also informs the meeting that on the 15th December, 1917, the Society of Estate Medical Officers had been formed and had forwarded to him the following resolutions which had been passed unanimously:

"1. That in the opinion of this Society, the further centralization of hospitals would not be to the advantage of the estate labourer.

"2. That in view of the important medical and sanitary problems awaiting solution in this country, it is the opinion of this Society that re-organization of the Government medical and sanitary services is urgently required.

"3. That the past record of the Government medical service does not, in the opinion of this Society, afford grounds for the belief that the taking over of the estate hospitals and dispensaries would be to the advantage of the estates."

The SECRETARY lays on table a memorandum by the Standing Committee on medical matters together with appendices which had been circulated beforehand.

Mr. MOOIJAART says that since the Standing Committee had drawn up this memorandum, the Society of Estate Medical Officers had been formed and had sent to this Association certain resolutions, which they had just heard read out, supported by a mass of reasons, which were too lengthy for them to consider to-day and which he himself had only had an opportunity of scanning. A glance, however, had been sufficient to show him that on the fundamentals of the whole question the Estate Medical Officers, who claimed to have the most intimate knowledge of the estate medical problems, found that their policy was diametrically opposed to that of the Government.

Let them consider for a moment of whom this Society of Estate Medical Officers was composed, as this was important. It did not consist of merely a few medical men from one District or from one State of the Federation. It included, he believed, with two

exceptions, every European estate Medical Officer between Singapore and Penang, that was the whole of the Federated Malay States, Johore and the Colony. Some thirty per cent. of these gentlemen had been in the Government service and could therefore speak from personal knowledge of the Government Medical Department. And at the meeting, at which these resolutions were passed, over sixty six per cent. of the members were present; it would readily be understood that all the members of such a Society could never be present at any one meeting. Surely the opinion of a meeting so composed must command their respect and receive their careful consideration.

He would particularly draw their attention to the fact that the Society clearly distinguished between the two propositions (1) the centralization of hospitals *versus* the cottage hospitals system, and (2) Government control over estate hospitals *versus* the present system, in which Estate Medical Officers are appointed by and directly responsible to the estates themselves. It was fortunate that the first question could be considered entirely independently, and it was noteworthy that on this subject the Estate Medical Officers were absolutely unanimous.

No less unanimous were they in urging the necessity for the improvement and reorganization of the Government medical service, thus coinciding with the view expressed in the memorandum before them, the conclusion in which they had arrived at independently. The Society had clearly indicated that without such reorganization there was little prospect of the co-operation between Estate Medical Officers and Government Medical and Health Officers, which was essential, if the whole medical profession in the Peninsula was to concentrate their united efforts upon the public good. It was intolerable that the medical profession should be divided where such great and important problems awaited solution or that anything should interfere with such concentration.

It would almost seem that they had come to the parting of the ways, and in order that every one might have an opportunity of forming a deliberate opinion on the subject, he would propose that the memorandum, sent to them by the Society of Estate Medical Officers be printed and published for the information of delegates to this Association and estate managers generally, and that the question be placed on the agenda for the next meeting, when no doubt a decision would be arrived at as to the policy that they should adopt at this important juncture.

Mr. Tayler agrees that since the memorandum had only just been sent out, there had not been time to study its contents and he therefore quite agreed with Mr. Mooijaart and would second his proposal.

Mr. Kindersley extends his congratulations to the newly formed Society which was bound to be of the greatest usefulness both to the country in general and to the planting industry in particular and whose expressed views could not but carry the greatest weight.

Mr. Mooijaart's proposal is then carried unanimously.

11.—SILT CONTROL.

The SECRETARY reads the following letter:

"KUALA LUMPUR,
"*26th October, 1917.*

"SIR,

"SILT CONTROL BILL.

"With further reference to your letter 1138 of the 7th of September, I am instructed to thank you for inviting our comments on this draft Enactment.

"In reply I am directed to submit that the following amendments appear desirable in the opinion of this Association:

"*Section 6*—That provision be made giving an owner against whom an order is issued, the option to purchase the land being damaged, at a reasonable valuation.

"Reason: The initial cost of a silt-retaining dam or even the annual upkeep of same, might greatly exceed the total value of the land being damaged.

"*Section 9, Sub-section* (i)—That provision be made for appeal to some Court or duly constituted Rural Board.

"Reason: A Resident is liable to make an error of judgment. Protection, in the form of right to appeal, is the more necessary, as under the proposed Enactment the Resident will fill the position of both prosecution and judge.

"*Section 9, Sub-section* (ii)—That where the State land being damaged is a road, and the protection required will in effect amount to the increasing of the road reserve by the abandoning of cultivation on a portion of alienated land abutting on same, that the land to be so abandoned be resumed by Government, the owner being compensated.

"Reason: The road reserve in many hilly districts is not sufficiently wide for the efficient protection of the roads from natural silt. It would be unfair that an owner, for the benefit of the State, should be debarred from or compelled to abandon the proper cultivation of his land, without compensation."

"I have, etc.,
"(Sd). H. C. E. ZACHARIAS,
"*Secretary.*

"UNDER SECRETARY,
"FEDERATED MALAY STATES,
"KUALA LUMPUR."

Mr. KINDERSLEY informs the meeting that since then a meeting of the Federal Council had been held and he was glad to say that the Government had agreed to insert the right of appeal which seemed to him the most important point. The other two suggestions had not been adopted but they seemed to him less essential than the other.

12.—FOOD SUPPLY.

The SECRETARY reads the following correspondence:

"KUALA LUMPUR,
"*26th October, 1917.*

"SIR,

"I am instructed to enquire, in view of the circular sent by the Chairman of the Committee of Food control, appointed on 27th July of this year, to all estates in the Federated Malay States regarding local food production; as to what steps are being taken to control the supply and cost of rice in the country.

"I have, etc.,
"(Sd.) H. C. E. ZACHARIAS,
"*Secretary.*

"UNDER SECRETARY,
"FEDERATED MALAY STATES,
"KUALA LUMPUR."

"KUALA LUMPUR,
"*30th October, 1917.*

"No. 4661/17.

"SIR,

"I am directed to acknowledge the receipt of your letter dated the 26th October and to inform you that I am not in a position to state what steps are being taken to control the supply and cost of rice in the country.

"The Committees of Food Control appointed in the Colony and Federated Malay States have no doubt considered this question and it is presumed that if they decide to make any orders on the subject of the control or cost of rice such orders will be at once published.

"I have, etc.,
"(Sd.) S. MCARTHUR,
"*Under Secretary to Government, F.M.S.*

"THE SECRETARY,
"PLANTERS' ASSOCIATION OF MALAYA,
"KUALA LUMPUR."

Mr. KINDERSLEY says that they all had seen the circular regarding the planting up of vegetables and food-stuffs and he knew that a good deal in that direction was already being done. The matter was not compulsory but he trusted that all of them would do their very best to assist in this direction.

13.—TELEPHONES.

The SECRETARY reports the receipt of the following letter:

"KUALA LUMPUR,
"*24th October, 1917.*

"No. 969/17.

"SIR,

"With reference to the question of keeping Telephone Exchanges open at night respecting which a deputation of Planters waited on the Chief Secretary, I am directed to inform you that the Government have decided that a night service will be given when there are 100 subscribers to an exchange.

"I have, etc.,
"(Sd.) C. H. ALLIN,
"*Director of Post and Telegraphs, F.M.S.*

"THE SECRETARY,
"PLANTERS' ASSOCIATION OF MALAYA,
"KUALA LUMPUR."

Mr. IRVING hardly thinks that that reply was quite good enough. Districts like Kuala Selangor were not likely at that rate ever to have a night telephone service. The point was that isolated estates really wanted night telephone service far more urgently than telephone subscribers in towns and he proposes that the Secretary ask for the reconsideration of the decision.

Mr. HARVEY suggests that it might be possible to obtain night telephone service if the subscribers concerned would agree to pay the extra cost.

Mr. FALLON understands that $1,020 per annum had been asked which seemed to him unnecessarily high.

Mr. CUMMINS quite agrees that the Government should be approached again in the matter. It seemed to him atrocious that subscribers already paying two to three hundred dollars per annum should be penalized against those paying only $80 per annum. He certainly hopes that the Association would insist on obtaining the necessary facilities and therefore would second Mr. Irving's proposal.

Carried.

14.—DISABLED OFFICERS.

The SECRETARY reports having circularized all Constituent Associations as follows:

"KUALA LUMPUR,
"*8th November, 1917.*

"DEAR SIR,

"The employment on estates of Officers discharged from the Army was considered at the last meeting of our Standing Committee and it was felt that in the great majority of cases, the medical

examination in England of such applicants for planting billets has not been sufficiently strict. It was eventually decided to ask the Rubber Growers' Association to urge that medical examination be more adequate and, if possible, carried out by somebody who has had actual experience of planting conditions. In the personal experience of the members of my Committee, nearly all men who have come out under these conditions have since had to return to England, much impaired in health and naturally very much depressed in mind.

"To substantiate our contention, I should now be very glad if you could kindly let me have figures in respect of your district as to the number of men discharged from the Army who have been given planting billets—*viz.*, number arrived, number returned and duration of their stay.

"Believe me, etc.,

"(Sd.) H. C. E. ZACHARIAS,

"*Secretary.*"

The following was an analysis of the replies received:

District.	Discharged officers. No. engaged.	Still employed.	Left.
Batang Padang ...	8	4	4
Klang	3	3	–
M.P.A.A.	13	10	3
Kajang	5	2	3
Kuala Selangor ...	1	—	1
Central Pahang ...	2	2	–
Johore	2	2	–
Kapar	10	5	5
Batu Tiga	2	2	–
Negri Sembilan ...	4	3	1
	50	33	17

Mr. TAYLER hopes that Associations who had not yet fully replied would do so at an early opportunity so that this additional information could be placed before the Association at their next meeting.

15.—COPRA.

Mr. KINDERSLEY says that by the courtesy of the Director of Agriculture he was able to read the following letter:

"KUALA LUMPUR,

"*14th December, 1917.*

"No. 4578/17.

"SIR,

"With reference to your minute of the 30th November, 1917, on this office paper of even number (your 984/17), I am directed by the Chief Secretary to inform you that, with a view to encouraging

the establishment of oil-mills locally, the Government will grant a site for a factory at a nominal rent and will agree to grant a loan against a mortgage. The Chief Secretary is also prepared to recommend that Government take up debentures in the Company.

"2. The question of reducing the railway freight on copra is under consideration.

"3. I am to add that it is considered essential in an undertaking of this kind that there should be co-operation on the part of the planters: otherwise the undertaking will not gain the support it must have in order to be a success.

"I have, etc.,

"(Sd.) W. MACKRAY,
"*for Under Secretary, F.M.S.*

"THE DIRECTOR OF AGRICULTURE,
"FEDERATED MALAY STATES,
"KUALA LUMPUR."

The offer of the Government in this matter was a generous one and he hoped that many Planters would avail themselves of the scheme.

Mr. KENNEDY suggests the advisability of bringing the contents of the letter to the notice of all Constituent Associations.

Mr. VAUGHAN SMITH informs the meeting that his Association was already in communication with the Government on the subject.

16.—RUBBER GROWERS' ASSOCIATION.

Lt.-Col. FOX says that lately the Rubber Growers' Association had asked for an expression of opinion on the important subject of restriction of output. The reply had been considered not by the Standing Committee of the Planters' Association of Malaya but by the Local Committee of the Rubber Growers' Association. This seemed to him to be not in the best interests of the industry, as the Rubber Growers' Association Local Committee could not be as representative as the Planters' Association of Malaya Standing Committee whose members were annually elected. He certainly thinks that on general matters the Rubber Growers' Association ought to refer to this Association and at one time he had even intended to suggest that their Standing Committee and the Rubber Growers' Association Local Committee should be amalgamated.

Mr. MCCULLOCH supports Col. Fox and would suggest that the Rubber Growers' Association be asked to instruct their Local Committee to consult the Planters' Association of Malaya on all general matters. He still thought that the industry would best be served by an amalgamation of the two Committees with a special Sub-Committee to look after the Research Department.

The sense of the meeting is then taken and the Secretary is instructed accordingly to write to the Rubber Growers' Association in the matter.

17.—ALIENATION OF LAND.

The SECRETARY places on table Rubber Lands Restriction Amendment Bill which had been gazetted on the 17th inst. and which he had been advised, would make the transfer of any land impossible from one individual to any corporation whatever their nationality.

Mr. KINDERSLEY says that the Bill was to be considered at a Federal Council Meeting to be held on the 21st, and he therefore would like to have their opinion on the subject. The genesis of the bill was obviously due to representations made by some foreign Powers against the Rubber Lands Restriction Enactment passed earlier in the year.

Mr. CUMMINS observes that this was a vital matter to all of them as it would make it impossible for anybody to restrict his liabilities by turning a partnership into a private company. He sincerely hopes that Mr. Kindersley would make strong representations against the passing of this Bill.

COL. FOX agrees and thinks that Mr. Kindersley might take it that this Association was absolutely unanimously against the passing of the Bill.

18.—GENERAL.

Mr. TAYLER suggests some more fans and a re-arrangement of the seating accommodation.

The meeting terminates at 1.15 p.m.

By Order,

H. C. E. ZACHARIAS,
Secretary.

Abstract of Meteorological Readings in the various Districts of Malaya for the month of August, 1917.

District.	Mean Barometrical Pressure at 32° Fah.	Maximum in Sun.	Temperature.				Hygrometer.				Prevailing Direction of Winds.	Total Rainfall.	Greatest Rainfall during 24 hours.
			Mean Dry Bulb.	Maximum.	Minimum.	Range.	Mean Wet Bulb.	Vapour Tension.	Dew Point.	Humidity.			
Kelantan, Kota Bahru	...	141.8	81.6	90.96	72.61	18.32	76.6	.818	73.2	76.0	...	13.86	2.42
Pahang, Kuala Lipis	...	...	80.42	88.77	72.9	15.87	75.45	...	...	...	...	9.55	1.67
Johore, Johore Bahru	...	...	...	85.88	73.51	...	...	...	...	...	...	17.49	...
Singapore, Kandang Kerbau ...	29.757	161.0	81.7	86.3	74.3	12.0	77.33	.875	...	81.3	...	17.26	4.27
Malacca, Durian Daun ...	29.863	160.0	81.7	88.6	70.0	18.6	77.9	.925	...	86.0	S.	14.48	4.11
Negri Sembilan, Seremban ...	...	151.3	79.4	86.7	71.4	15.3	75.9	.832	73.6	83.4	N.W.	12.68	1.61
,, Kuala Pilah ...	...	138.5	81.2	88.3	71.2	17.1	78.2	.920	76.3	85.0	...	7.13	2.32
,, Port Dickson...	...	114.9	80.3	85.9	73.6	12.3	76.8	.853	77.7	82.7	...	16.75	5.93
Selangor, Kuala Lumpur ...	29.760	142.3	80.4	87.8	73.5	14.3	76.7	.850	74.2	81.0	N.E.	14.56	2.12
,, Klang	...	...	78.9	83.1	72.2	10.9	75.8	...	...	...	...	9.55	1.58
,, Kuala Selangor ...	...	...	...	87.3	74.2	13.1	...	...	...	...	...	9.94	2.24
,, Rawang	...	...	...	91.0	...	...	...	...	...	...	...	17.49	2.70
Perak, Telok Anson	...	...	82.96	92.0	70.0	22.0	78.50	.917	...	83.0	...	7.03	1.73
,, Ipoh	...	...	81.07	93.0	70.0	23.0	76.29	.842	73.65	80.0	...	9.25	1.88
,, Taiping	...	113.0	80.16	92.0	71.0	21.0	76.27	.855	...	85.0	...	15.11	3.14
,, The Cottage	...	...	...	...	...	...	...	...	...	...	...	34.99	4.76
,, Parit Buntar	...	...	82.39	93.0	72.0	21.0	77.40	.876	...	81.0	...	13.58	2.67
Penang, Georgetown	29.747	142.1	82.7	89.0	72.9	16.1	77.6	.869	74.2	77.0	E.	9.96	1.45
Kedah, Alor Star	...	...	...	...	...	...	...	...	...	...	...	7.36	1.52
Perlis, Kangar	...	...	...	87.61	73.77	13.84	...	...	...	...	...	5.58	1.52